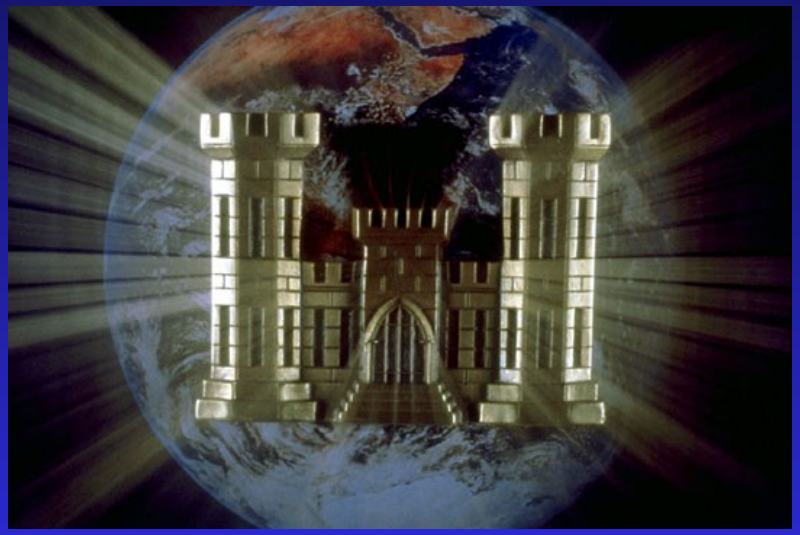
The M&V Costing Toolkit version 2.95 *Released July 17, 2003*



Presentation and Tutorial

US Army Corps of Engineers

TABLE OF CONTENTS

- Background
- Installation
- Workbooks
- Tutorial

BACKGROUND

- Energy Savings Performance Contracts (ESPCs) allow the government and third party planners to make energy use more efficient.
- The toolkit can be used to aid in the M&V process of an ESPC.
- The toolkit estimates M&V costs and allows a user to determine which method of monitoring provides the necessary data at an acceptable cost.

BACKGROUND-INFORMATION GENERATED

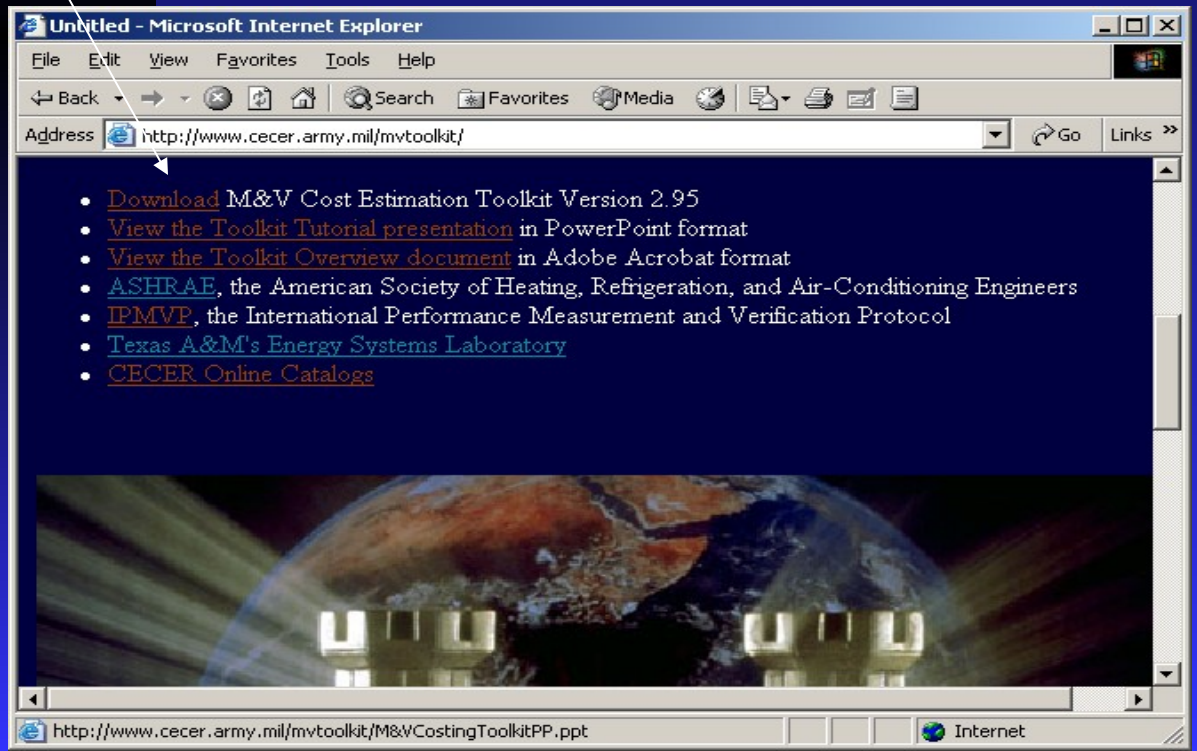
- Labor Costs
- Equipment Costs
- Weather data
- Data recovery
- M&V method (Long, Short, Utility, Simulation) summaries
- First year
- Amortized life
- Close out
- Total cost summary for each ECM
- Total cost summary for all ECMs

TOOLKIT METHODS

- Long M&V- Similar to Short M&V in data used, but uses long term data and does not use spot checks as in short M&V.
- Short M&V-(look at long M&V)
- Utility- Analyzes the utility usage to determine the output and efficiency
- Simulation- Uses established numbers and formulas to simulate the output

INSTALLATION

- At webpage (www.cecer.army.mil/mvtoolkit/) click on download link.
- Click the “Save” button when window pops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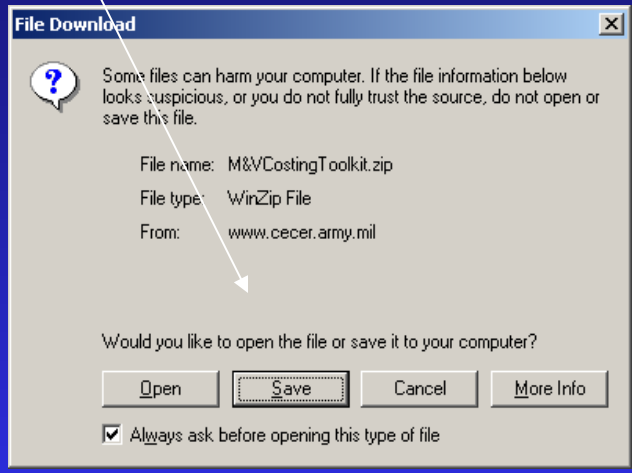
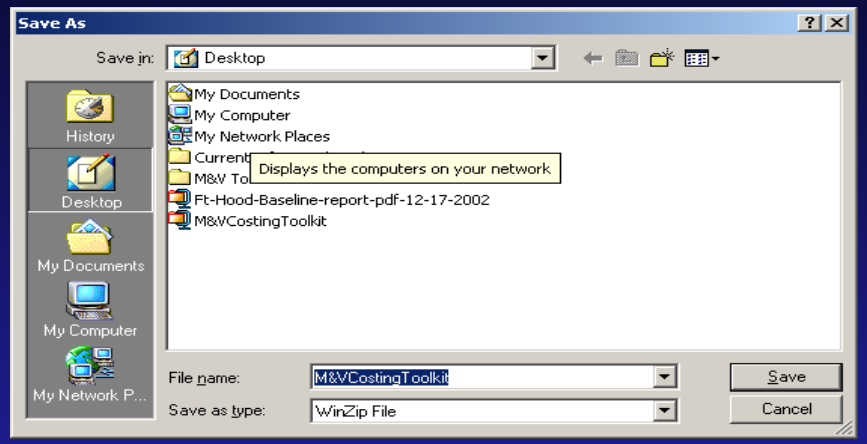
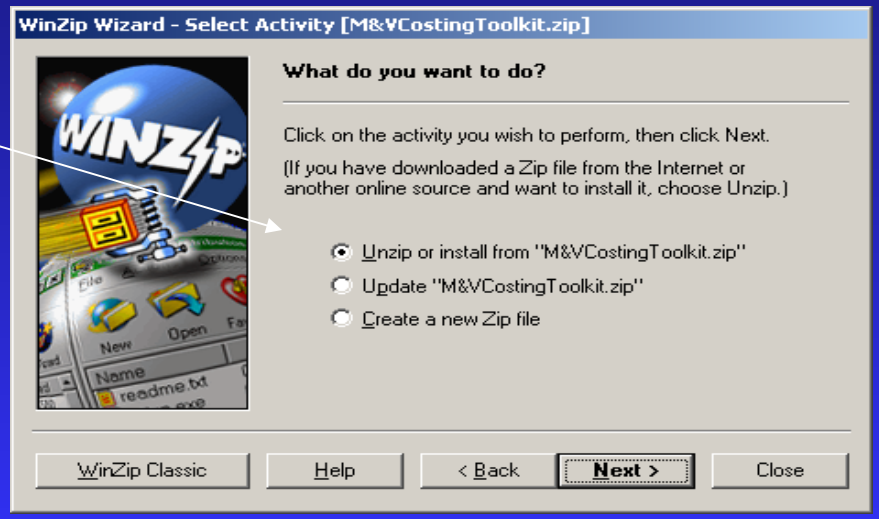
ASHRAE, the American Society of Heating, Refrigeration, and Air-Conditioning Engineers
IPMVP, the International Performance Measurement and Verification Protocol
Texas A&M's Energy Systems Laboratory
CECER Online Catalogs
http://www.cecer.army.mil/mvtoolkit/M&VCostingToolkitPP.ppt
Internet


File Download
Some files can harm your computer. If the file information below looks suspicious, or you do not fully trust the source, do not open or save this file.
File name: M&VCostingToolkit.zip
File type: WinZip File
From: www.cecer.army.mil
Would you like to open the file or save it to your computer?
Open
Save
Cancel
More Info
Always ask before opening this type of file

INSTALLATION

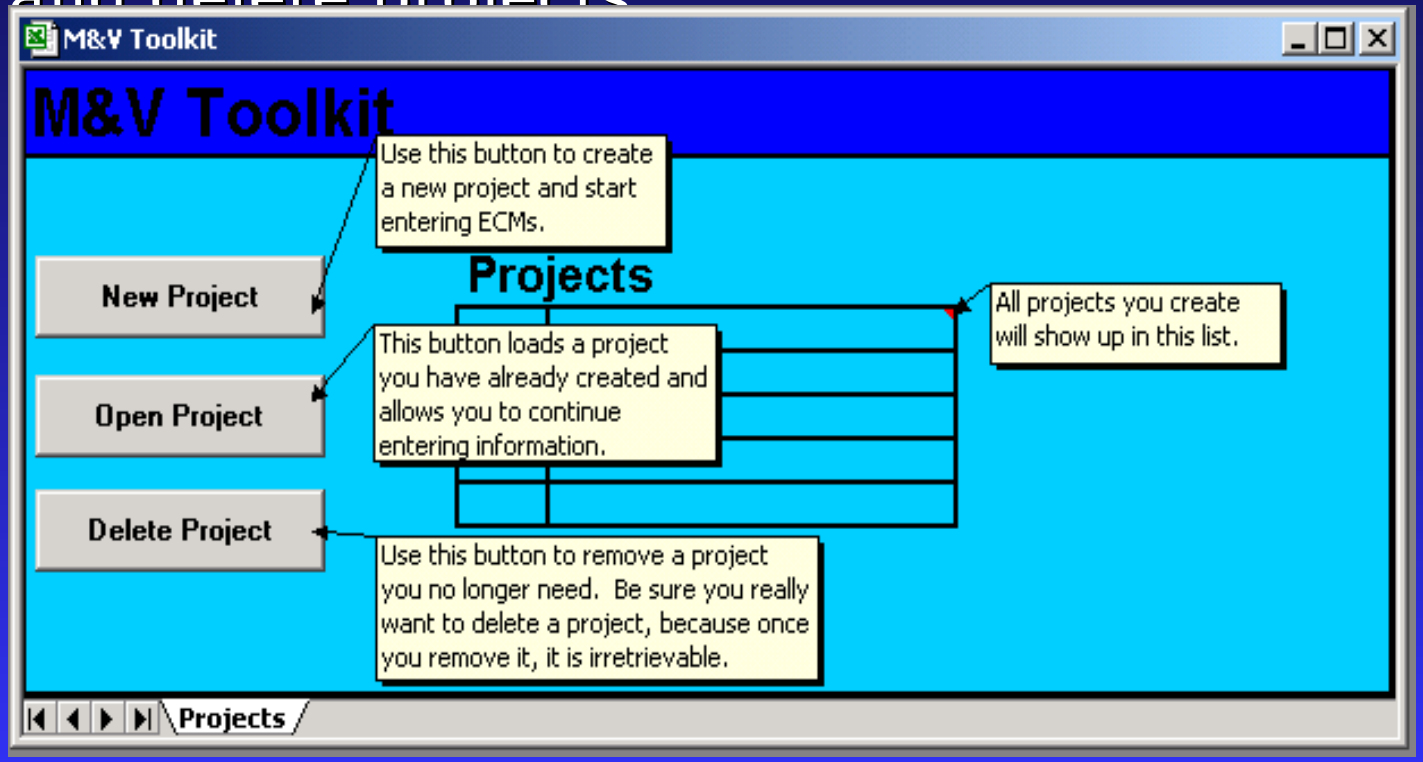
- Save Toolkit where you want and then open the file
- With Winzip just follow the “Next” buttons and install to your computer.




WinZip Wizard - Select Activity [M&VCostingToolkit.zip]
What do you want to do?
Click on the activity you wish to perform, then click Next.
(If you have downloaded a Zip file from the Internet or another online source and want to install it, choose Unzip.)
Unzip or install from "M&VCostingToolkit.zip"
Update "M&VCostingToolkit.zip"
Create a new Zip file
WinZip Classic
Help
< Back
Next >
Close

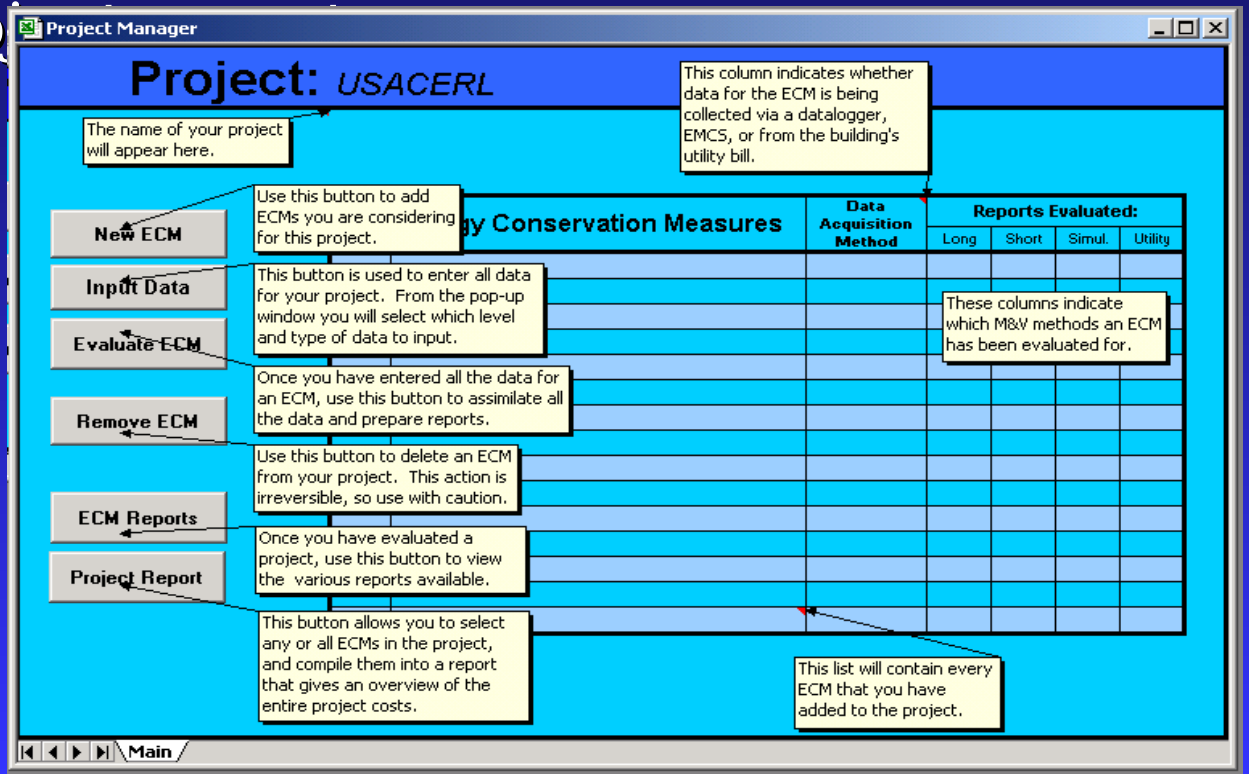
WORKBOOKS

- M&V Toolkit File- Front end application from which the user can create, open and modify, and delete projects


M&V Toolkit
M&V Toolkit
Use this button to create a new project and start entering ECMs.
New Project
Projects
All projects you create will show up in this list.
This button loads a project you have already created and allows you to continue entering information.
Open Project
Delete Project
Use this button to remove a project you no longer need. Be sure you really want to delete a project, because once you remove it, it is irretrievable.
Projects

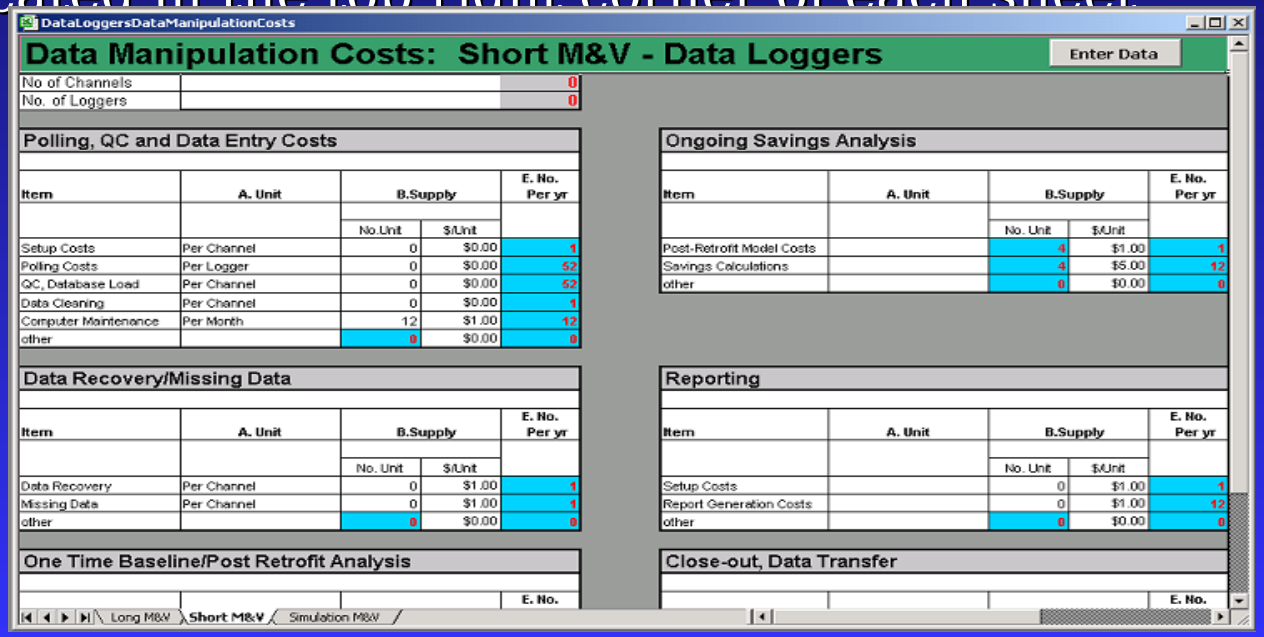
WORKBOOKS

- Project Manager- From this workbook, the user can add or remove ECMs, enter or modify cost data, and compile and view pro


Project Manager
Project: USACERL
The name of your project will appear here.
This column indicates whether data for the ECM is being collected via a datalogger, EMCS, or from the building's utility bill.
Use this button to add ECMs you are considering for this project.
New ECM
Input Data
This button is used to enter all data for your project. From the pop-up window you will select which level and type of data to input.
Evaluate ECM
Once you have entered all the data for an ECM, use this button to assimilate all the data and prepare reports.
Remove ECM
Use this button to delete an ECM from your project. This action is irreversible, so use with caution.
ECM Reports
Once you have evaluated a project, use this button to view the various reports available.
Project Report
This button allows you to select any or all ECMs in the project, and compile them into a report that gives an overview of the entire project costs.
Data Acquisition Method
Reports Evaluated:
Long
Short
Simul.
Utility
These columns indicate which M&V methods an ECM has been evaluated for.
This list will contain every ECM that you have added to the project.
Main

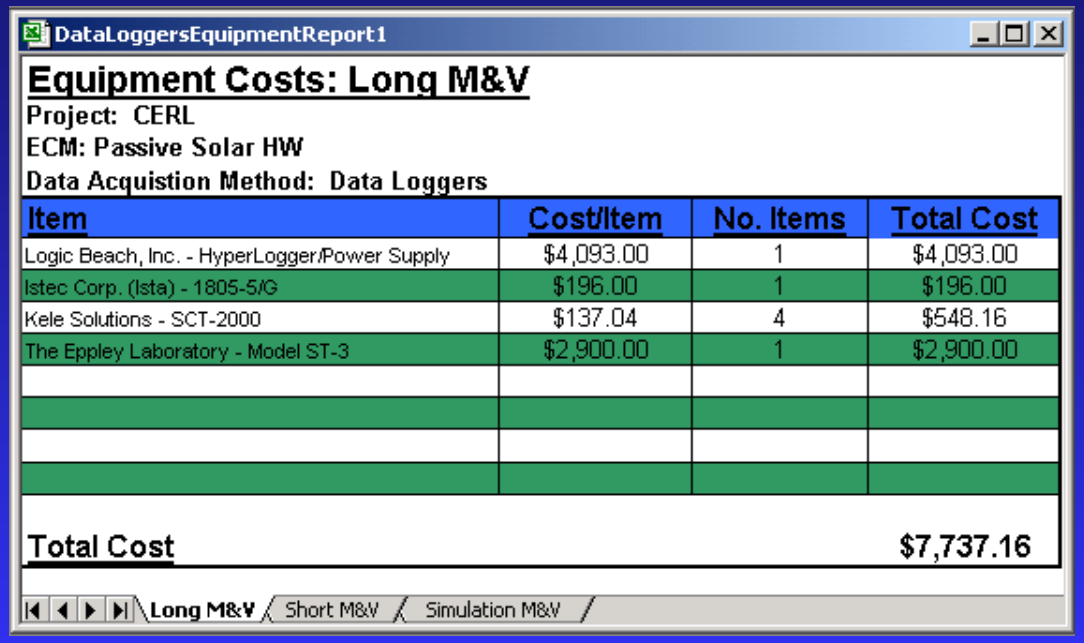
WORKBOOKS

- Data Input- Divided into two categories- Project level and ECM level
- Workbooks are available from the ‘Input Data’ button in the Project Manager
- Data can be entered using the ‘Input Data’ button located in the top right corner of each sheet


DataLoggersDataManipulationCosts
Data Manipulation Costs: Short M&V - Data Loggers
Enter Data
No of Channels 0
No. of Loggers 0
Polling, QC and Data Entry Costs
Item | A. Unit | B.Supply No.Unit | B.Supply $/Unit | E. No. Per yr
Setup Costs | Per Channel | 0 | $0.00 | 1
Polling Costs | Per Logger | 0 | $0.00 | 52
QC, Database Load | Per Channel | 0 | $0.00 | 52
Data Cleaning | Per Channel | 0 | $0.00 | 1
Computer Maintenance | Per Month | 12 | $1.00 | 12
other | | 0 | $0.00 | 0
Ongoing Savings Analysis
Item | A. Unit | B.Supply No. Unit | B.Supply $/Unit | E. No. Per yr
Post-Retrofit Model Costs | | 4 | $1.00 | 1
Savings Calculations | | 4 | $5.00 | 12
other | | 0 | $0.00 | 0
Data Recovery/Missing Data
Item | A. Unit | B.Supply No. Unit | B.Supply $/Unit | E. No. Per yr
Data Recovery | Per Channel | 0 | $1.00 | 1
Missing Data | Per Channel | 0 | $1.00 | 1
other | | 0 | $0.00 | 0
Reporting
Item | A. Unit | B.Supply No. Unit | B.Supply $/Unit | E. No. Per yr
Setup Costs | | 0 | $1.00 | 1
Report Generation Costs | | 0 | $1.00 | 12
other | | 0 | $0.00 | 0
One Time Baseline/Post Retrofit Analysis
Close-out, Data Transfer
Long M&V
Short M&V
Simulation M&V

WORKBOOKS

- Cost Reports- Reports available through the ‘ECM Reports’ and ‘Project Reports’ buttons in the Project Manager



DataLoggersEquipmentReport1

Equipment Costs: Long M&V

Project: CERL

ECM: Passive Solar HW

Data Acquistion Method: Data Loggers

Item	Cost/Item	No. Items	Total Cost
Logic Beach, Inc. - HyperLogger/Power Supply	$4,093.00	1	$4,093.00
Istec Corp. (Ista) - 1805-5/G	$196.00	1	$196.00
Kele Solutions - SCT-2000	$137.04	4	$548.16
The Eppley Laboratory - Model ST-3	$2,900.00	1	$2,900.00

Total Cost $7,737.16

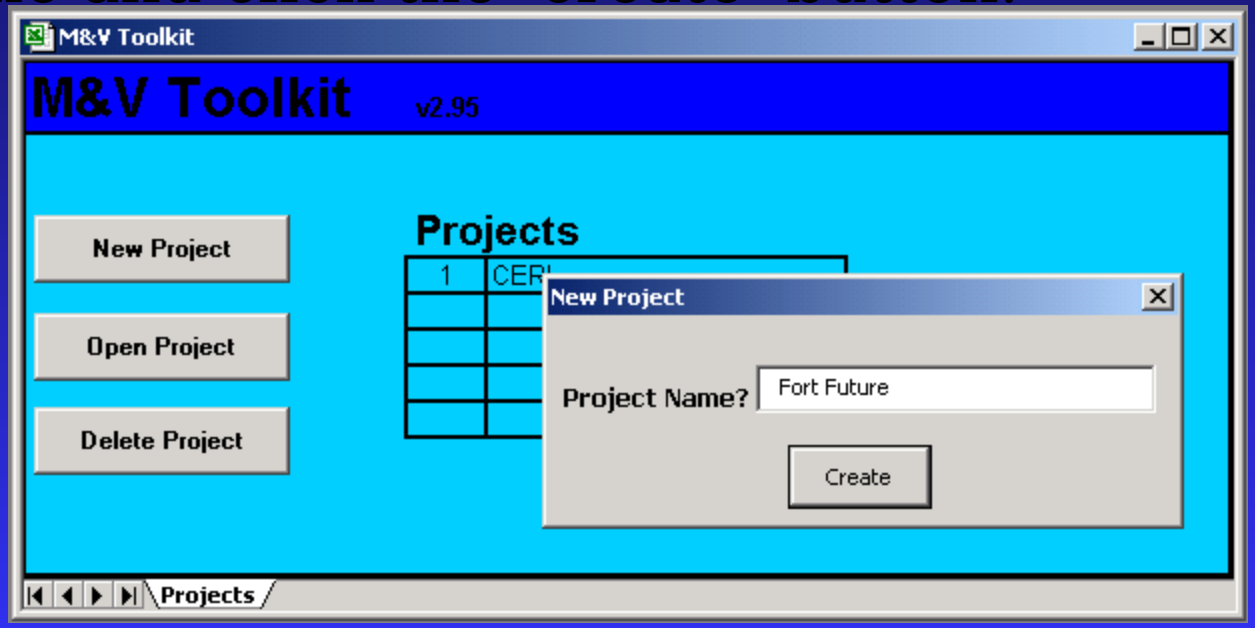
Long M&V | Short M&V | Simulation M&V

TUTORIAL

- Step One- New Project
- Step Two- New ECM
- Step Three- Data Input(Project Level)
- Step Four- Data Input(ECM Level)
- Step Five- Evaluating an ECM

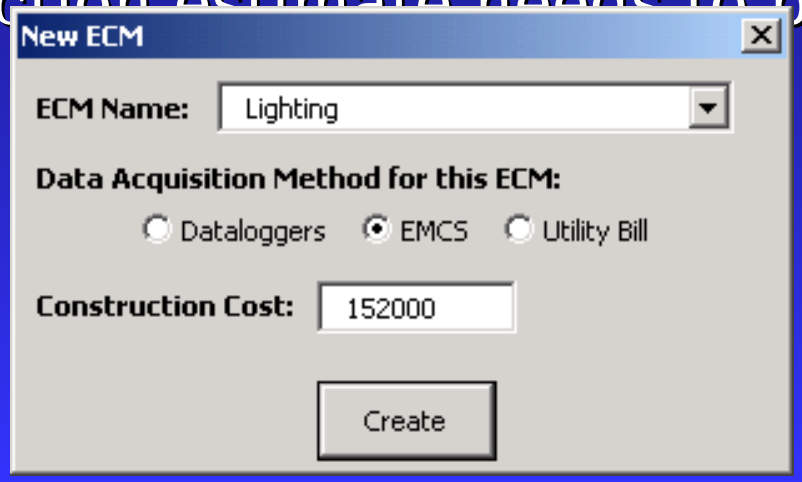
TUTORIAL- NEW PROJECT

- To start a new project, click the ‘New Project Button’
- When the window pops up, enter your project name and click the ‘create’ button.



TUTORIAL- NEW ECM

- At the Project Manager window use the ‘New ECM’ button
- When the window appears the user can select an existing ECM name or create a new one
- Then the user selects the method of data collection(data loggers, EMCS, or utilities) and a construction estimate needs to be input.

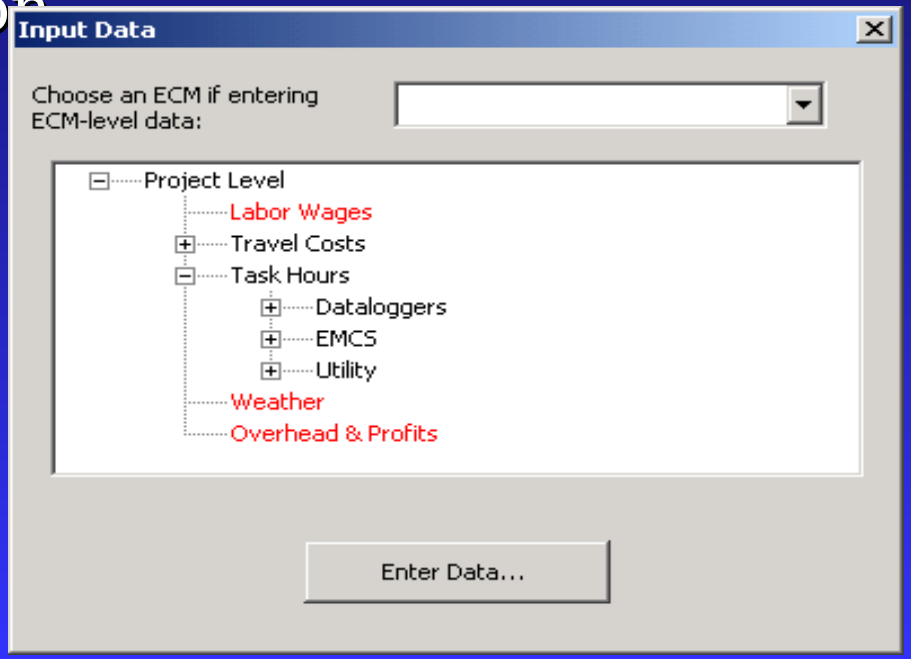


TYPES OF DATA

- Project-level- Cost information that is the same throughout the project and does not depend on the ECM, method, etc. (ie. Labor wages, travel costs, task hours, weather data, and overhead)
- ECM-level- Cost information that varies based on the ECM and method (usually associated with equipment and labor)

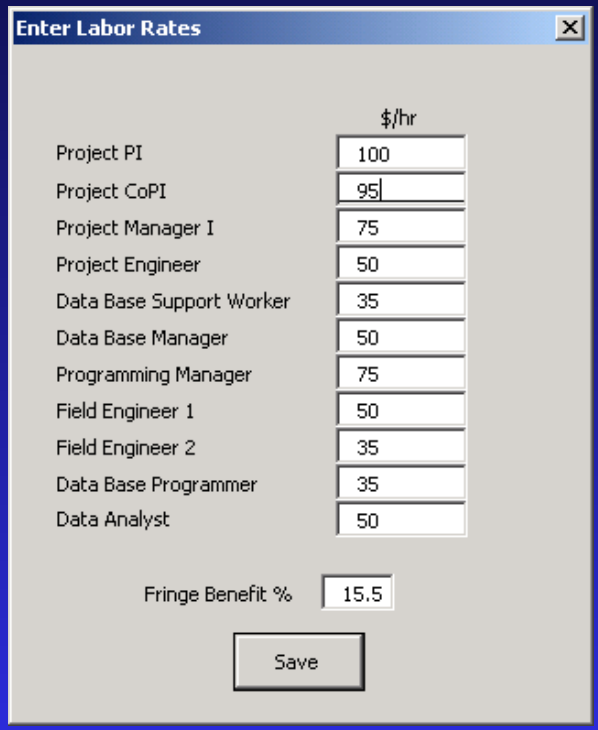
TUTORIAL- PROJECT LEVEL DATA INPUT

- Click ‘Input Data’ button at Project Manager window
- Click the ‘+’ button next to items in the tree to expand it to enter the appropriate information



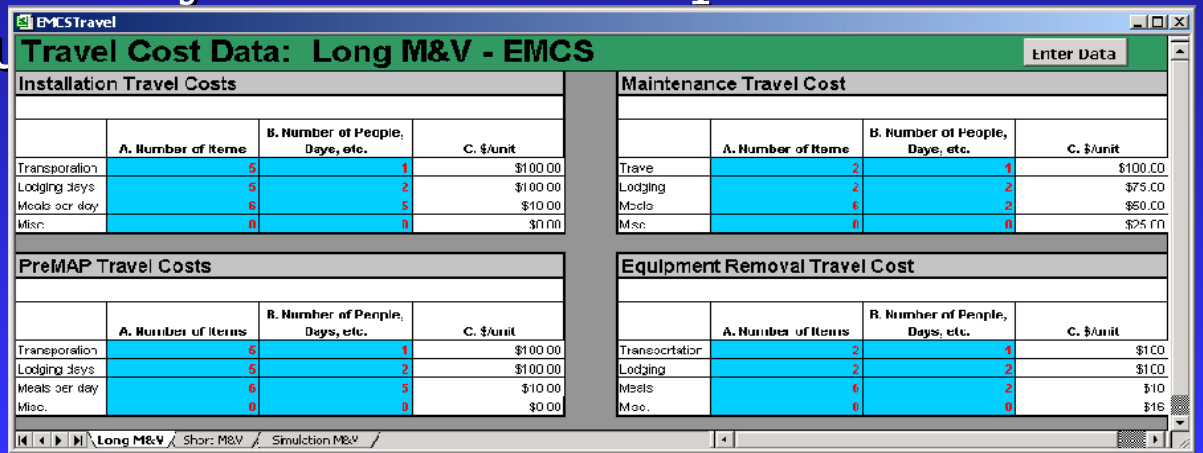
TUTORIAL- PROJECT LEVEL DATA INPUT

- When the user expands the project level data tree he can choose to enter the data related to labor wages, travel costs, task hours, weather, and overhead & profits.
- At the labor wages window, the user enters the rates for all the laborers and the fringe benefit percentage to be added to each wage.



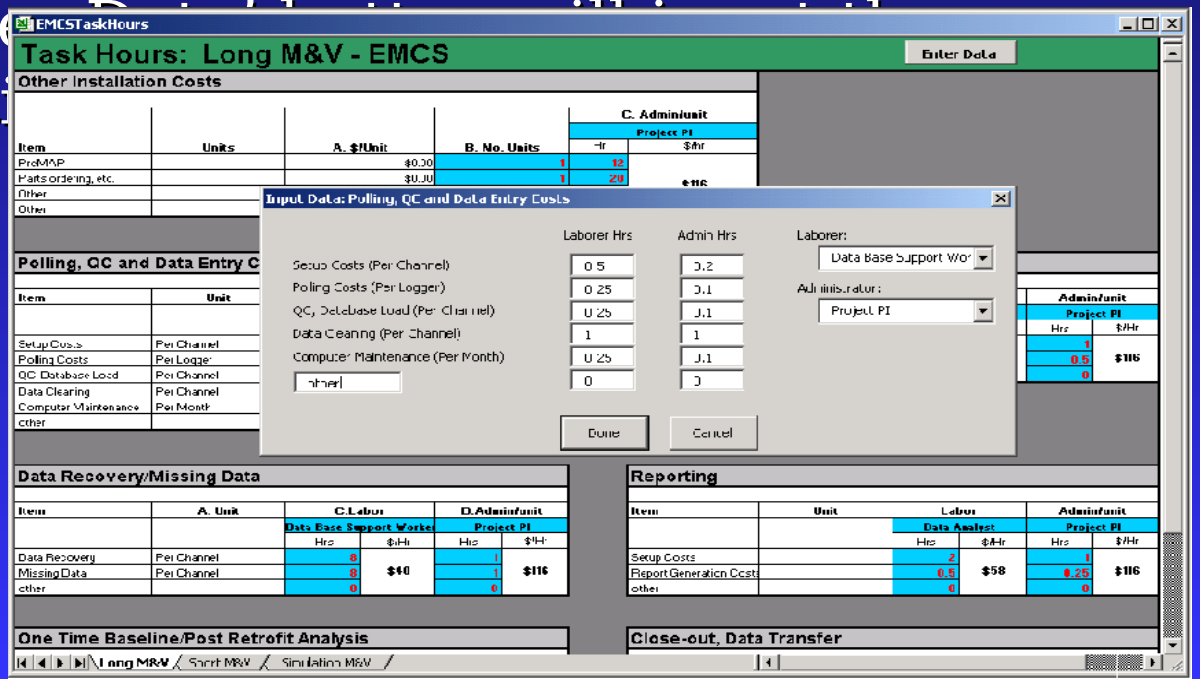
TUTORIAL- PROJECT LEVEL DATA INPUT

- The travel costs sheet allows the user to enter the number of people and days and the costs required for travel to install, maintain, and remove equipment.
- Use the ‘Enter Data’ button in the upper right corner to input the numbers
- Travel data only needs to be input in the methods u



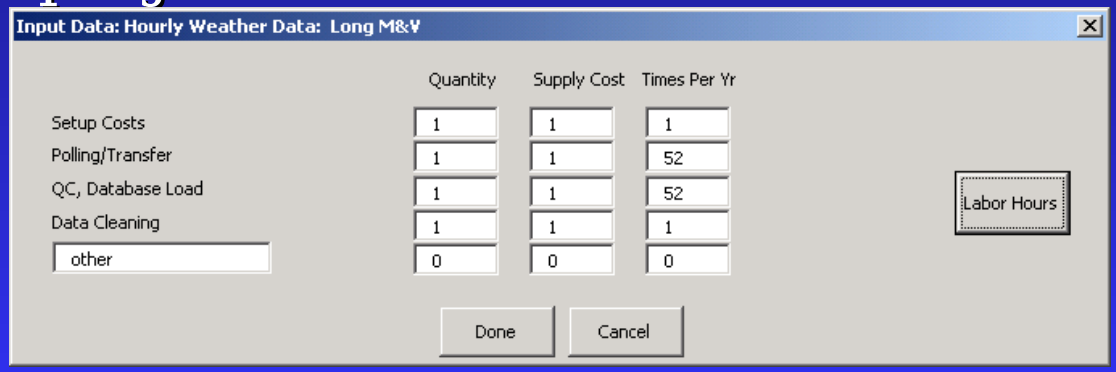
TUTORIAL- PROJECT LEVEL DATA INPUT

- The task hours sheet is used to enter the amount of time necessary for tasks such as polling and closeout, and who is performing the labor.
- The 'Ente… informati…



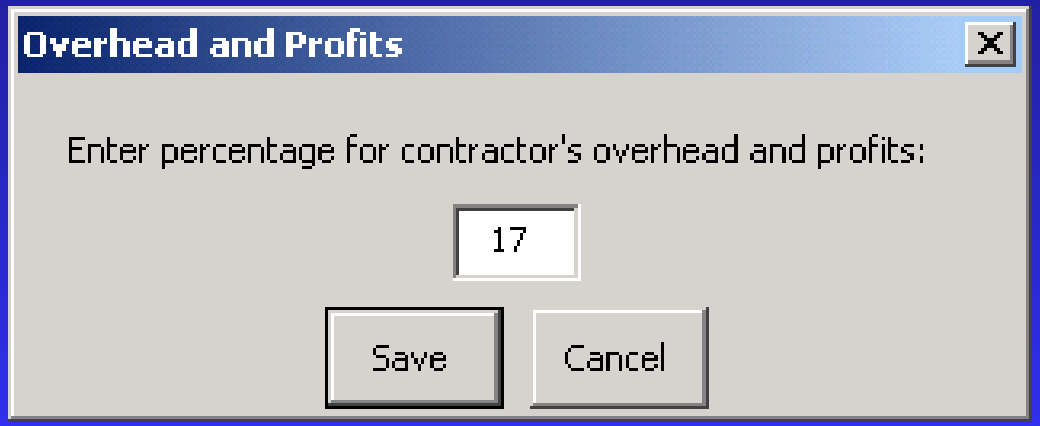
TUTORIAL-PROJECT LEVEL DATA INPUT

- The weather window allows the user to enter the supply costs, frequency, and labor hours required for the collection of weather data
- Once the various fields are completed click the ‘Labor Hours’ button to enter the amount of time to be spent on this task by the laborer and project administrator



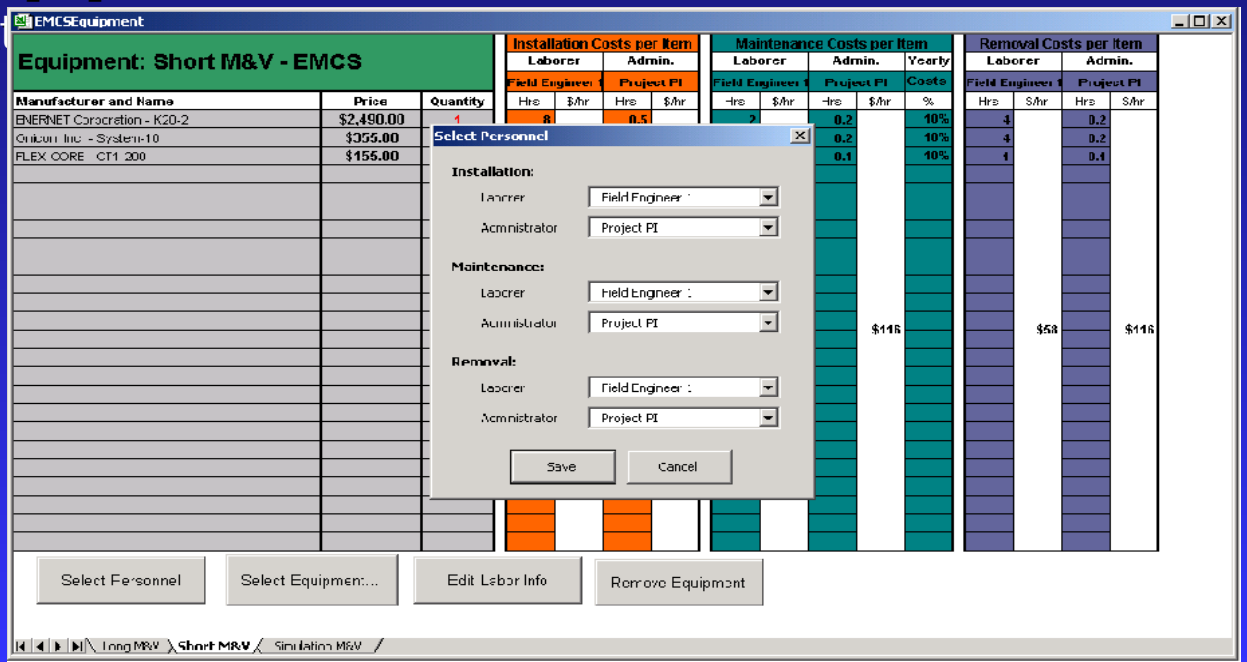
TUTORIAL- PROJECT LEVEL DATA INPUT

- In the Overhead and Profits window, the the user enters percentage to accommodate the contractor’s profits and overhead.
- This number will be multiplied by the total project cost and added to it



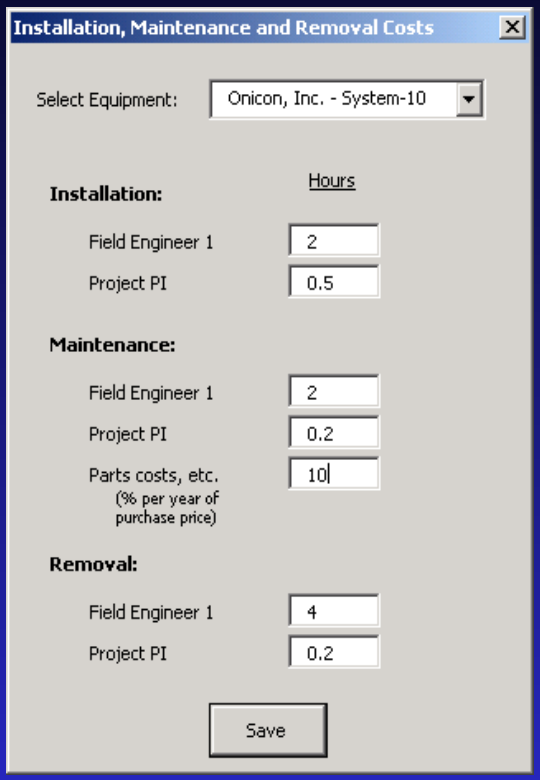
ECM LEVEL DATA INPUT

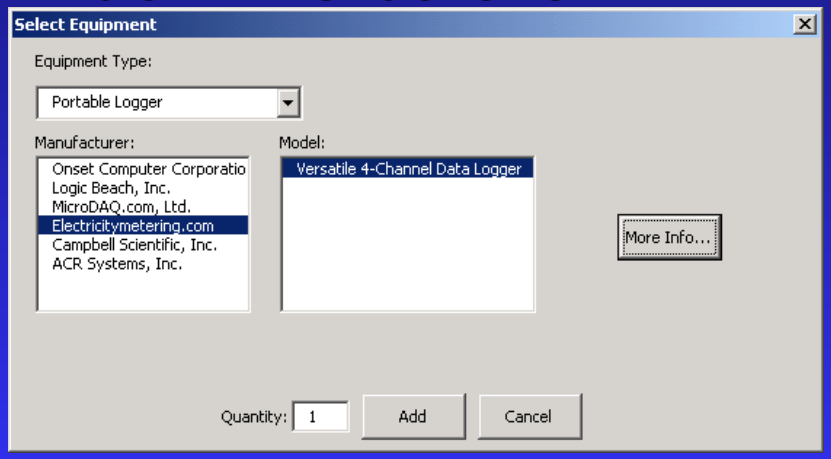
- Once an ECM has been added to the project click the ‘Input Data’ button and select the ECM from the dropdown menu at the top of the window. Then expand to Equipment and click ‘Enter Data’
- A new worksheet will open with the four important buttons for ECM Equipment costs: Select Personnel, Select Equipmen

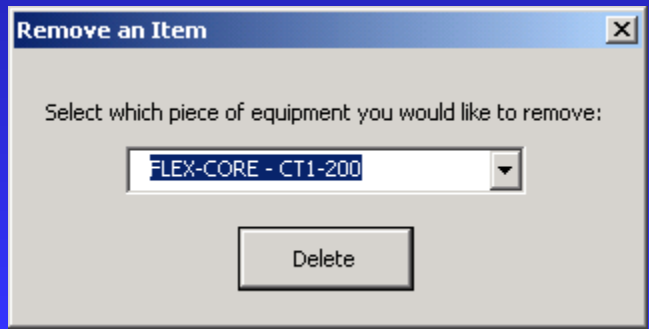


ECM LEVEL DATA INPUT

- The user must select each one of these buttons and enter the appropriate data for each ECM by following the various buttons and tree structures much like before





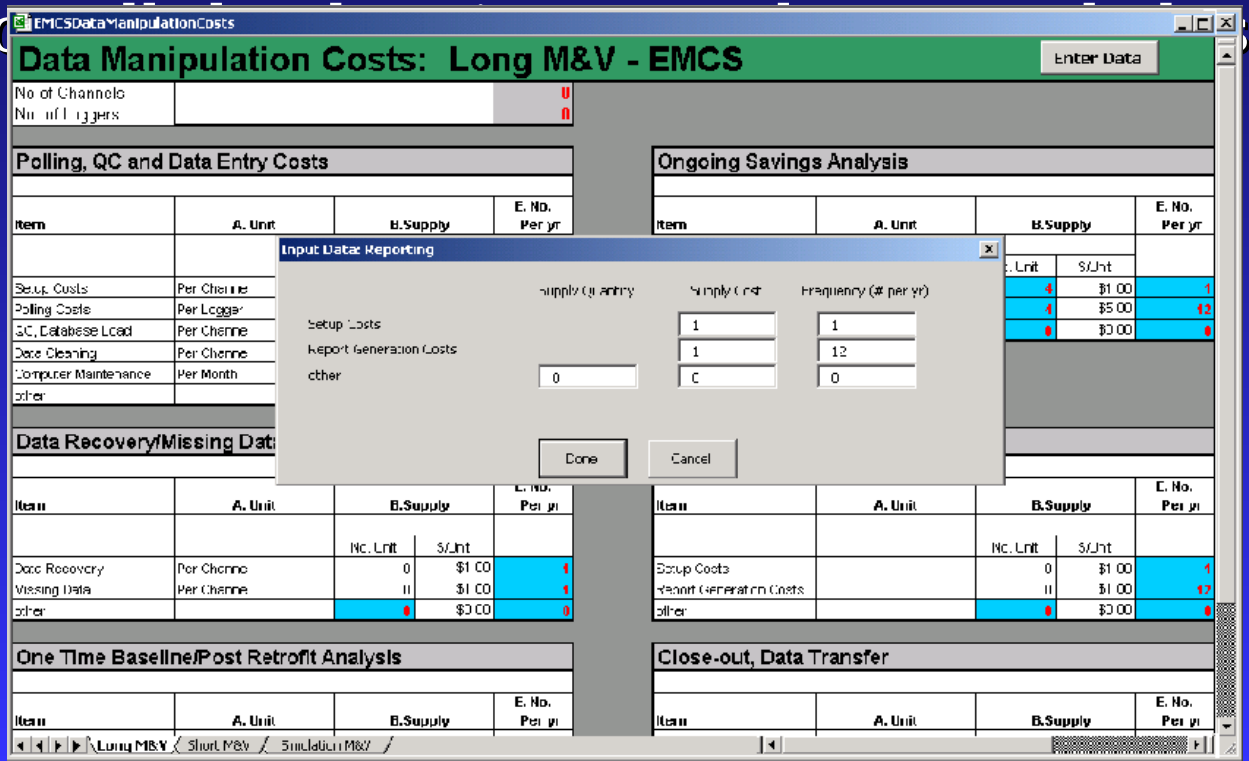


ECM LEVEL DATA INPUT

- After the equipment costs comes the Data Manipulation Costs-such as data retrieval, lost data recovery, report generation….
- Using the Input Data tree expand ‘Data Manipulation Costs’, choose the method of evaluation for the ECM(if more than one method repeat), and click ‘Enter Data’

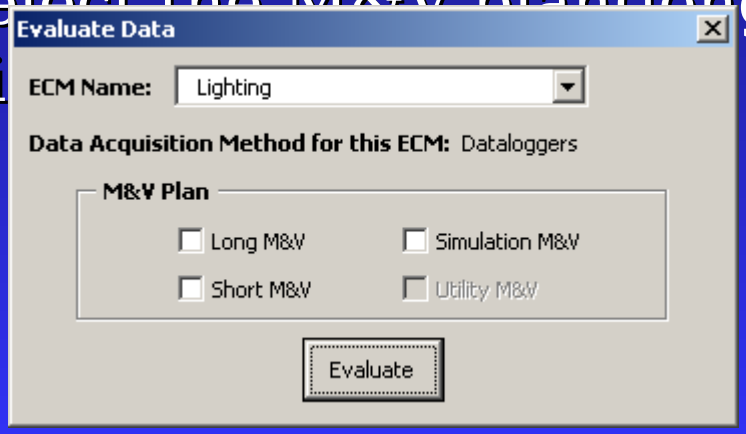
ECM LEVEL DATA INPUT

- When the new window pops up use the ‘Enter Data’ button at the top right to supply the appropriate information
- Onc



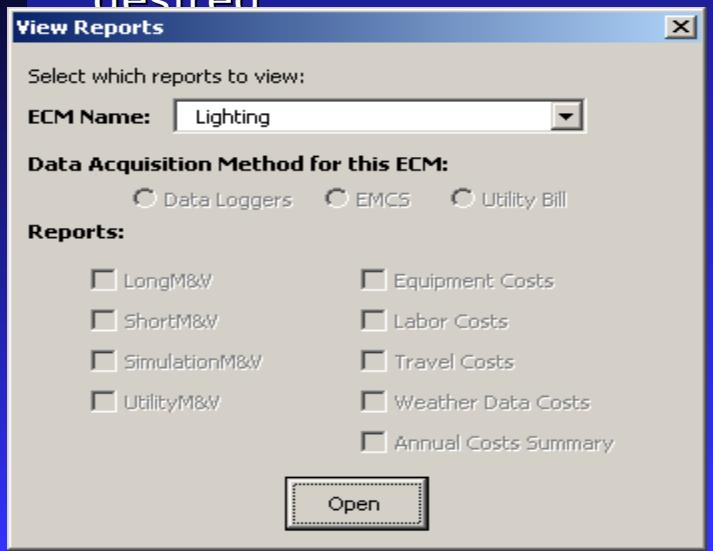
EVALUATING AN ECM

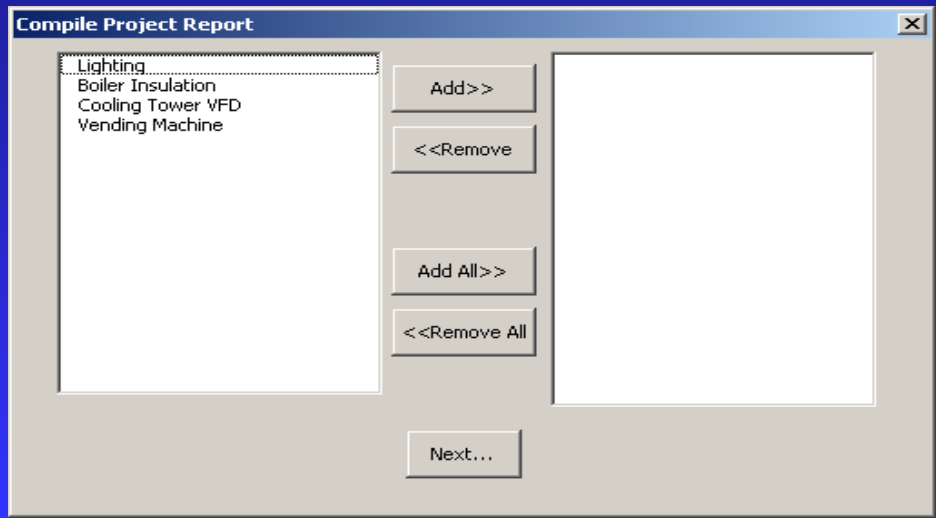
- After all the data has been entered for an ECM it can be evaluated
- At the Project Manager window, select ‘Evaluate ECM’
- When the window appears the user can select from the pull-down list the name of the ECM and then select the M&V plan(long or short M&V or uti



REPORTS

- After an ECM has been evaluated, the user can obtain a report about that ECM
- Also available is a project report which displays the costs of all evaluated ECMs
- At the Project Manager window, select the ‘ECM Report’ button or the ‘Project Report’ button.
- With the ECM report the user chooses the ECM, the method of data acquisition, and the report desired
- With the project report, the user chooses however many ECMs as desired





SUMMARY

- A more detailed tutorial and explanation of the toolkit is available in the User's manual
- The toolkit and all other related applications are available at www.cecer.army.mil/mvtoolkit/